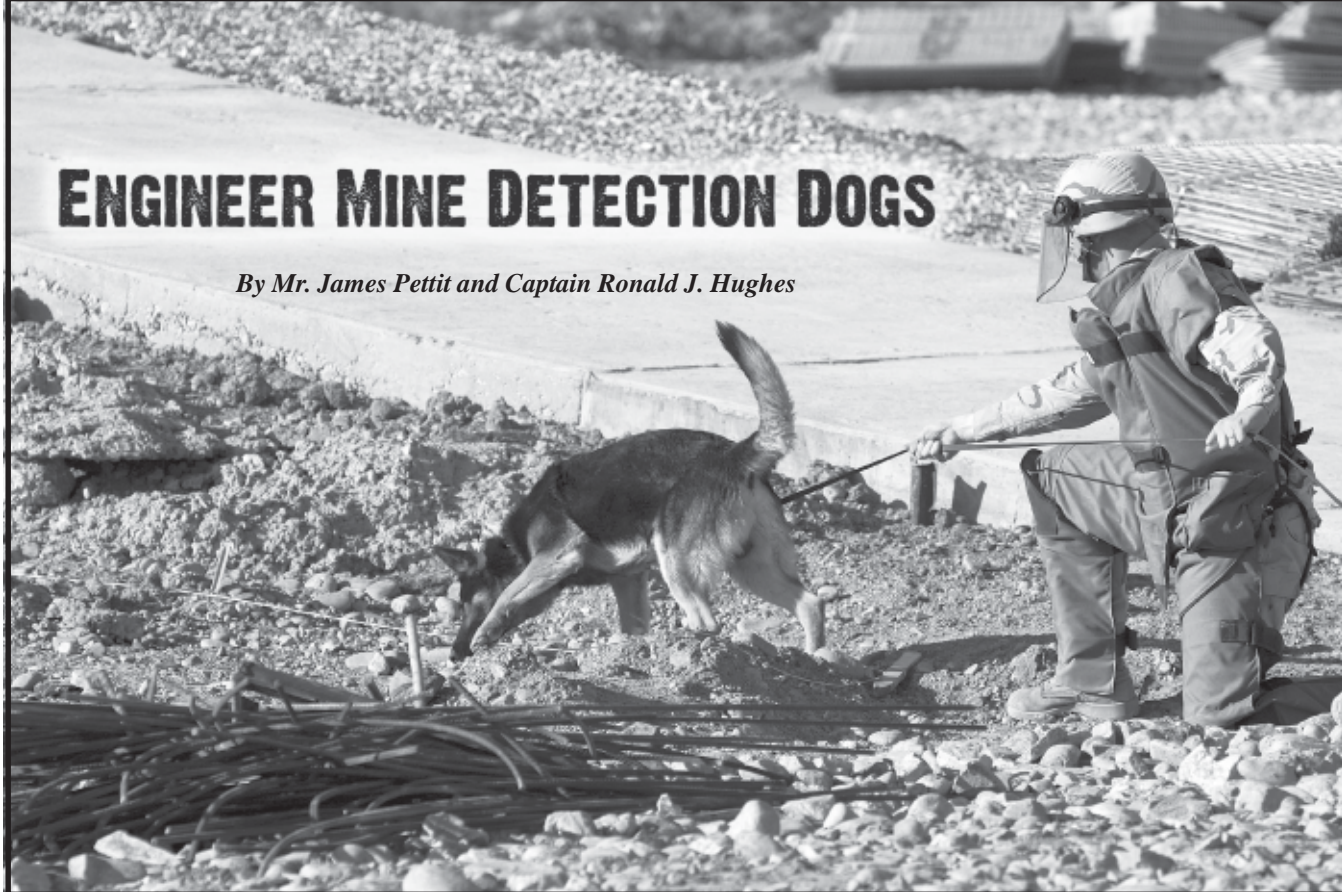


ENGINEER MINE DETECTION DOGS

By Mr. James Pettit and Captain Ronald J. Hughes



There is a significant mine threat in numerous countries that US forces have the potential to be deployed to for operations in support of national strategy. As the current levels of mine contamination are unconfirmed, the threat to the movement of US troops can be significant. Proven safe routes can change overnight, requiring the use of engineer resources to clear and proof these routes and accesses to critical locations. Somalia, Bosnia, Kosovo, and Afghanistan are a few of the high-profile places where the US Army has deployed in high-risk mined areas. This article includes information on how mine detection dogs (MDDs) enhance the US mine clearance capability and why they are a necessary tool for the force.

From ancient beginnings, the training for military working dogs (MWDs) has been continuously refined to produce a highly sophisticated and versatile extension of a soldier's own senses. Even the most complex and sensitive machines are unable to duplicate the operational effectiveness of a properly trained working dog. The US Army first used dogs for mine detection in World War II, when the 228th Engineer Mine Detection Company deployed about 100 dogs in Algeria and Italy. During the Vietnam War, the US Army and the US Marine Corps used dogs for mine detection, tunnel detection, and tracking.

During the 1970s and 1980s, several US Army laboratories conducted technical studies to test dogs' abilities to perform mine detection under

various conditions. A 1977 study by Nolan and Gravite (Mine Detecting Canines) concluded that mine/booby trap detecting canines represent highly adaptable, sensitive, and specific detection systems. The report also conceded that MDDs are reasonably durable and readily reproducible. In 2002, the US Army contracted for MDDs to work in Afghanistan, where the



Training an MDD on a short leash

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE SEP 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE Engineer Mine Detection Dogs				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Engineer School,14010 MSCoE Loop BLDG 3201, Suite 2661,Fort Leonard Wood ,MO,65473-8702				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

dogs cleared areas, proofed the work by mine clearing armor-protected (MCAP) D7 bulldozers, and cleared mined soil berms created by MCAP D7 clearance operations. In 2003, the Army began to establish its own MDD detachment within the Engineer Regiment.

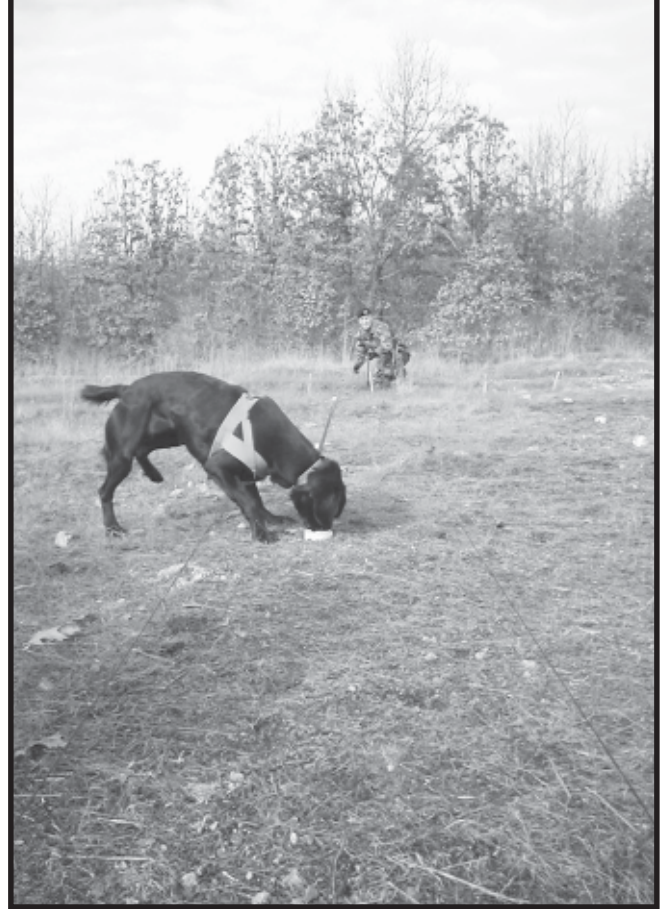
Why use dogs for mine detection? MDDs provide a fast and efficient detection capability that can save lives. They can reduce the risk involved with mine clearance during combat or peacekeeping operations. They have excellent mobility and utility over ground that is not accessible to vehicles and other mechanical clearance/detection equipment. MDDs provide a detection capability without touching the device itself, and MDDs will not initiate magnetically influenced fuzes.

MDDs must not be seen as a fail-safe panacea. However, it is accepted that they have a high detection rate and that they offer rapid mine/explosive vapor detection. Additionally, MDDs provide a faster mine detection capability than current magnetic-anomaly detection equipment and manual probing techniques. It must be understood that MDDs are merely an additional tool to enhance the productivity of mine clearance operations and to help ensure the safety of the soldiers. MDDs are not a stand-alone system for conducting mine clearance operations.

Specific tasks that MDD teams (each consisting of an MDD and its handler) are capable of performing include assisting units with locating minefields in area surveys and performing field and road surveys and casualty evacuation. MDDs can recognize mines by the distinct odor of the explosives or other components of the explosive devices, including the metal and plastic casings surrounding the explosive. MDDs will sit when they discover a scent that they have been trained to locate. They are operationally suitable when used to supplement other preventive measures that are taken to locate and/or avoid mines, improvised mines/explosive devices, and surprise firing devices. Traditional engineer mine detection tasks benefit from the use of MDDs. They reduce the time spent on a search and will search for mines in open areas, fields, woods, and along embankments. MDDs are also an excellent tool for route-proofing along roads and railways. An MDD team can be used in a minefield extraction role to search a path to a given location, such as a crashed vehicle, or in support of area searches and route proofing.

MDD teams can be employed in different ways. Engineer and explosive ordnance disposal (EOD) assets can be tasked to dispose of unexploded ordnance (UXO) when contamination exists on main supply routes. Using MDDs to determine whether a mine threat exists can significantly reduce the closure time and any delays that may be imposed. Examples are as follows:

- **Vehicle accidents.** When a vehicle has left the roadway during an accident, there is the potential that it has entered a mined area. Current tools are slow and may impose delays in situations involving casualties that require immediate evacuation. MDDs provide a fast detection capability,



Training an MDD on a long leash with a surface-laid mine

allowing any mines between a known clear area and the vehicle/casualty to be marked and avoided.

- **Route proofing.** Current procedures use mechanical means, such as rollers and detectors, for route proofing. MDDs provide a significantly faster detection capability, allowing routes to be proofed more quickly and efficiently and to a greater degree of accuracy.
- **Building and roadblock clearance.** MDDs can reduce the time required for formal proofing and clearance when it is necessary to obtain access to buildings or get through roadblocks that were created by the piling of rubble that may be mined.
- **Area identification.** Area identification, as a mission, is singled out for assured mobility. MDDs lend speed to identifying areas with and without mines and allow a commander flexibility in mobility.
- **Quality assurance/proofing.** Quality assurance/proofing is a role for MDDs that will most likely be done out of enemy contact and in a relatively secure environment.

In all of these circumstances, the detection/proofing capability is conducted using MDDs in a low-risk environment. Because MDD assets are limited in the Army, they should be protected from direct/indirect fire. Where casualties result from vehicle accidents or mine strikes, MDD operations can be conducted under fire or during a high threat in order to aid the quick removal of casualties.



An MDD isolating an odor pattern

To obtain the maximum value from the services of trained MDD teams, it is essential to have a sound understanding of their capabilities, limitations, and conditions for employment. MDDs must be considered as additional, specialized detection tools and should only be used after a careful analysis of the situation, the climatic conditions, and the terrain.

MDD detection and warning capabilities stem from the combination of their training and superior scenting abilities. MDDs realize their fullest potential when conditions permit them to use their superior olfactory senses.

The actual continuous working time and the number of tasks that MDDs can perform will depend on the ability and character of the individual dogs. MDDs work on a short leash or a long leash under the direct control of the handler. MDDs will search for and indicate to their handlers the presence of all mines on which they have been trained. MDDs are mobile and easily transported, are capable of working in a variety of conditions and terrain, and increase the speed and efficiency of the task.

Commanders are encouraged to request MDD teams before entering areas where the probability of encountering minefields or booby traps is high. Once MDD teams are assigned to support a mission and the handlers are briefed, commanders should obtain the handlers' recommendations for the most effective employment of the MDD teams and best working positions and route selections, consistent with the factors that influence the dogs' detection capabilities. Commanders are cautioned that MDD support is used to search for casualty-producing devices and is not a substitute for unit security and safety planning. Commanders must ensure that unit personnel are careful to observe all cautions issued by the handlers.

Commanders should integrate MDD teams fully into the mission and include them in preparatory inspections and rehearsals. This will help to ensure that the handlers understand the breadth and scope of the mission. Commanders must designate security elements, if required, to overwatch MDD teams as they perform their mission.

MDDs are normally attached on a mission basis. Before assignment to any operation, the dog handler leader (a specified handler who is in charge of multiple MDD teams) is carefully briefed on the planned mission as far in advance as possible. This allows time for—

- The dog handler leader to select teams that have worked with the supported unit before and/or those teams that will be most effective for the particular mission.
- The handlers to prepare themselves and their dogs.
- The dogs to become familiar with the scents of the individual unit members.
- The unit members to familiarize themselves with the MDD team method of operation.
- The tactical unit to understand the MDD teams' capabilities and limitations, the temperament of the dogs, and any items of special interest.

Once an MDD team deploys to a theater, the MDD must be given time to acclimatize. The period of time required will largely depend on the degree of climatic change. MDDs should not be used on a live operation until 4 weeks after arrival in theater. Additionally, transferring a dog suddenly from one climate to another, such as from an air-conditioned room or vehicle to a hot environment, is detrimental to its capability. The MDD handler has the definitive say on whether his MDD is capable of working in particular climatic conditions.

It takes 6 months to train an MDD before deployment. At the end of the training period, the handler is fully acquainted with the dog's aptitudes, moods, and behaviors under different conditions. However, in order to maintain a high level of proficiency, MDD teams should undergo regular refresher training while in theater. MDDs will maintain their value as detecting tools only if they receive constant proficiency training.



Mr. Pettit is the program manager for engineer mine detection dogs at the United States Army Engineer School at Fort Leonard Wood, Missouri. He developed the initial concept and supervised the development and implementation of the 67th Engineer Detachment (MDD).

Captain Hughes is the first commander of the 67th Engineer Detachment and was instrumental in proving the concept of soldier-handled MDDs in Afghanistan. He was the primary author of Special Text (ST) 20-23-8, Use of Demining Dogs in Military Operations, and was responsible for training area development and training planning at Fort Leonard Wood for the dog detachment. Captain Hughes is a graduate of the United States Military Academy.